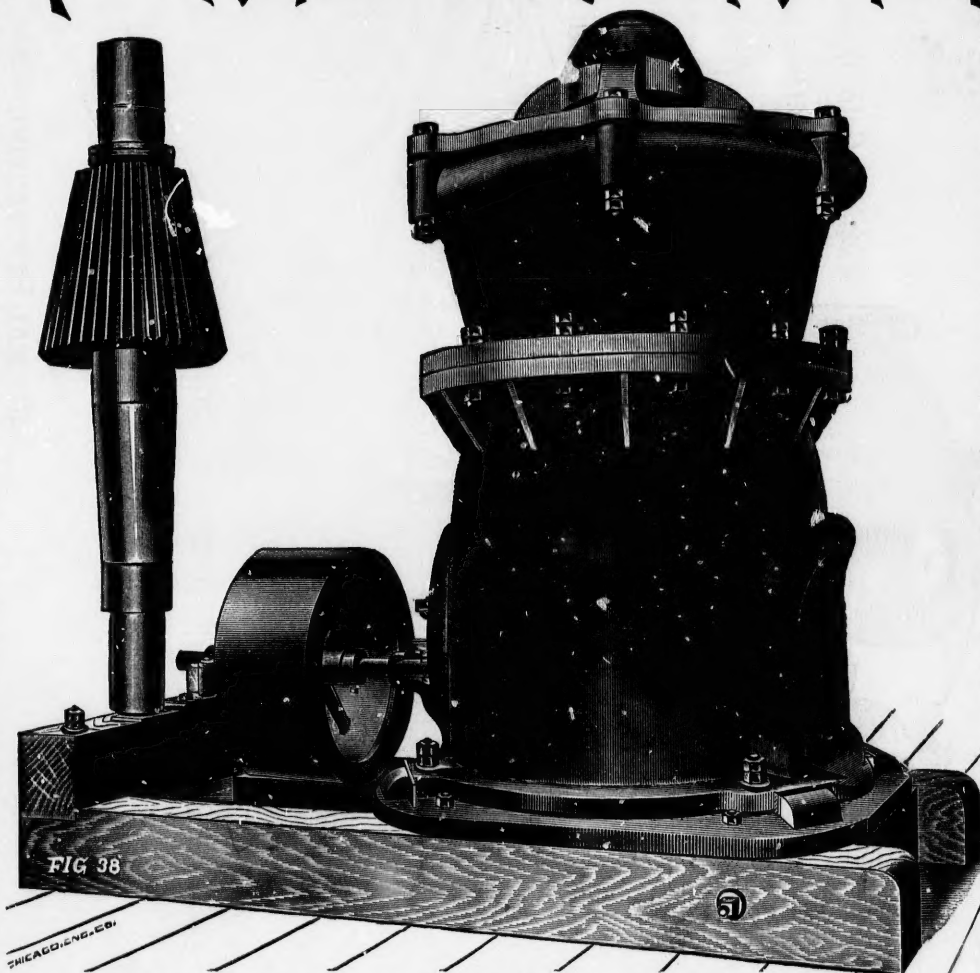


GATES ROCK AND ORE BREAKER



GATES IRON WORKS

PACIFIC IRON WORKS, . San Francisco, U. S. A.
GEO. FRASER & SONS, - Auckland, New Zealand.
PARKE & LACY CO., - Sydney, N. S. W., Australia.
MARK H. IRISH, . - Toronto, Canada.

50 South Clinton St., CHICAGO, U. S. A.
12 Cortlandt St., NEW YORK, U. S. A.
73 a Queen Victoria St., E. C. LONDON.

PATENTED IN THE

UNITED STATES

AND

FOREIGN - COUNTRIES.



Awarded Gold Medal Brussels
Exposition, 1883.

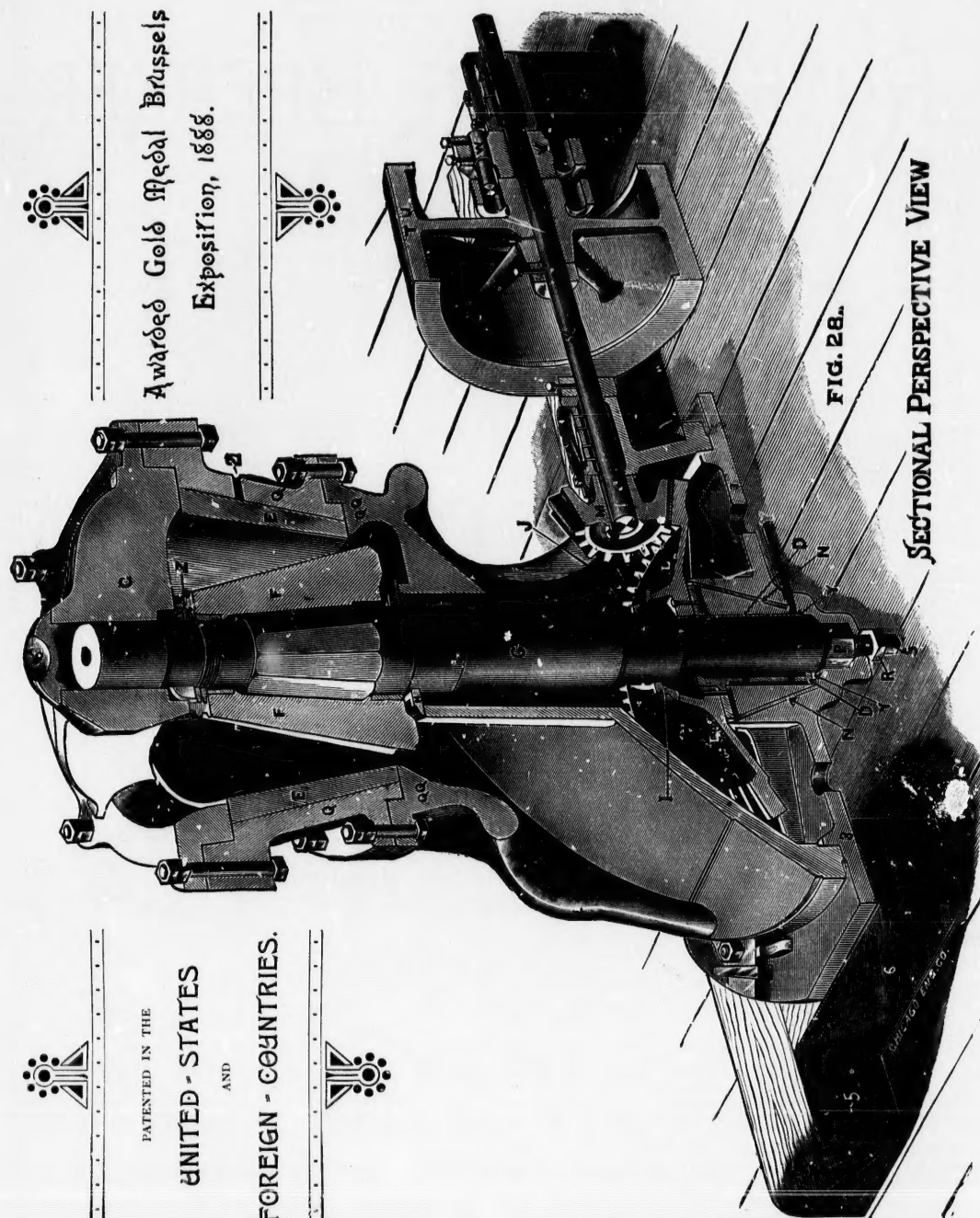


FIG. 28.

SECTIONAL PERSPECTIVE VIEW

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TESTIMONIALS

REPORT OF THE COMMITTEE ON A TRIAL WITH A BLAKE-MARSDEN BREAKER, AT MERIDEN, CONN., MAY 30, 1883.

The Committee met at the quarry of Messrs. Carpenter Bros., on the above date, to investigate the merits of a 9x14 Gates Rock Breaker, and a Blake Breaker with Marsden improvements, 9x15. The Gates Breaker was run with the following result: Amount of stone broken, 9 yards in 20½ minutes. The Blake-Marsden Breaker was then run with the following result: Amount of stone broken, 9 yards in 64½ minutes. The Breakers received and discharged the same size stone and same kind of stone. The machines were run from the same shaft.

COMMITTEE: W. W. Wright, of the Bradley & Hubbard Manufactory, of Meriden, Conn.; P. Callanan, Contractor, South Bethlehem, Albany County, N. Y.; J. S. Lane, Road Master, Hartford Division of the N. Y. N. H. R. R.; Simon Ingersoll, President of Ingersoll Manufacturing Company, Stamford, Conn.; Isaac Skidgell, Official Boiler Inspector, of Meriden, Conn.

P. S.—Power required, shown by indicator at the trial: the Blake-Marsden Breaker, 16 42-100 I. H. P.; the Gates Breaker, 31 75-100 I. H. P. Thus it will be seen that the Gates Breaker broke 3 1-7 yards to 1 of Marsden Breaker; also power used by Gates Breaker was about 33 per cent. less than by the Blake-Marsden Breaker doing the same amount of work. The stone broken was trap rock and granite. Our Breakers are sold on a guarantee to do double the work of any Jaw Breaker, receiving and discharging same size stone.

WHAT RAILWAY BALLAST MAKERS SAY OF THE GATES BREAKER.

CHOATE, DEL., Feb. 14, 1888.

Gentlemen:—Yours of the 9th inst. received. We take pleasure in giving our testimony as to the superiority of your Breaker over all others. We have used no other, but have seen them and know their capacities and weak points, and have had positive proof of their inferiority to Gates' machine. We know that our stone could not be broken into ballast by any other machine; that is, continuously, owing to its great hardness.

We consider your claims for it entirely reasonable, as we have found the machine able to do more work, break more stone than we were able to deliver to it in any one whole day.

The repairs have been very reasonable, considering the amount and character of work done, and much less than other machines, which we learn from others using them. We positively think it the greatest machine on earth for the purpose, and have a very enthusiastic opinion of it.

Yours truly,

J. B. HIZAR & SON.

WEEPING WATER LIME AND STONE CO.

E. L. Reed, Pres't.

T. R. McConnell, Sec'y.

WEEPING WATER, NEB., Feb. 29, 1888.

Dear Sirs:—In reply to yours of the 25th inst., would say that the Gates Breaker gives us satisfaction. We have three Breakers, one Size 3 and two Size 7. With our plant we can break 90 cars in 10 hours. I cannot say how long the concaves will last. Our Breaker we have run for two years, and have not spent a cent for repairs, and I think the concaves are good for ten years more. Our stone is very hard limestone. I expect to break 7,000 cars of ballast this summer, and I would not give a man one dollar to guarantee the expense of the Breakers, outside of oil. I took a gentleman to see one of ours last week; the weather was cold; he timed 4 cars in 42 minutes; they weighed 156,000 pounds.

Very truly,

E. L. REED,

President.

CHICAGO & ALTON R. R. CO.

General Roadmaster's Office.

BLOOMINGTON, ILL., Oct. 22, 1884.

Gentlemen:—In reply to your favor I wish to say that our Breaker Size 6, at Pearl, is working fine, and is giving entire satisfaction, breaking on an average 230 cubic yards per day of ten hours.

Yours respectfully,

W. RILEY,

Gen'l R. M.

NOTE.—The Breaker has been running constantly, with scarcely a dollar of repairs for four years.

CARPENTER BROS.

Railroad Contractors.

PORT CHESTER, N. Y., Feb. 20, 1888.

Dear Sirs:—We have been working from six to ten Rock Breakers for the last fifteen years. Among those used were three from the Gates Iron Works of Chicago (one Size 3, one Size 4, and one Size 6). We have no hesitancy in saying the "Gates Rock Breaker" is far superior to all others. It has every advantage. 1st. In quantity of stone broken, about three times as much as in a flat jaw breaker. 2d. In uniformity of size of stone broken, no spalls or flat pieces. 3d. A saving of from 30 to 40 per cent. of power by actual tests. 4th. A saving of from 25 to 50 per cent. to keep in repair. 5th. The continuous discharge prevents packing or pulverizing. We could enumerate many more advantages your Breaker possesses, and to sum it up will say, your machine is entitled to all you claim for it.

Very respectfully,

CARPENTER BROS.

ALTON, ILL., Feb. 11, 1888.

Dear Sirs:—You ask me what I think of your Breaker. I have used one of your Size 6 Breakers since 1881, and consider it, as you claim for it, "The Best on Earth." In fact, would not use any other. I am breaking 25 carloads of stone ballast daily, the cars averaging 30,000 lbs. to the car. Our stone is a hard limestone. The repairs have been very light during the seven years it has been running. So can cheerfully recommend your Breaker as being the best made.

Yours respectfully,

ALTON MACADAM & STONE BALLAST CO

Per Henry Watson, Pres't.

LEGRAND QUARRY CO.

QUARRY, IA., Feb. 13, 1888.

Gents:—We used the first Breakers made by you of each of three different sized patterns. After several years' service breaking 100 to 150 tons of stone per day with the large machine, and less than five dollars per year for repairs, the Breaker is as good to-day as when it came from the shop. I think it is the best Breaker that I have ever seen, and think there can be nothing better. We are all well satisfied with it.

Most respectfully yours,

GEO. A. GREGG,

Superintendent.

WHAT THE MACADAM AND ROAD METAL MAKERS SAY OF THE GATES BREAKER.

THE BARBER ASPHALT PAVING CO.

(Le Droit Building.)

WASHINGTON, D. C., Dec. 10, 1887.

Dear Sirs:—We have now in use in various cities of the United States, fourteen of your Rock Breakers, used for breaking stone to two and one-half inch size, for use in concrete foundations. These Breakers have given uniform satisfaction, and we prefer them to any others which we have tried, and take pleasure in recommending them to others having a similar class of stone breaking to do.

Yours truly,

THE BARBER ASPHALT PAVING CO.

F. V. Greene, Vice-President.

OFFICE OF W. A. L. THOMPSON HARDWARE CO.

TOPEKA, KAN., March 1, 1888.

Gentlemen:—Answering yours of February 25, we can only give you the opinion of those who bought from us, and that is wonderfully in favor of the Gates Breaker. The eight or ten breakers we have sold have, without exception, given satisfaction, and as to repairs, we have not ordered two hundred dollars worth of repairs in five years. One of our largest customers says, if any one wants a breaker and does not buy a Gates, he simply does not know his business. We have two customers for large breakers this spring.

Yours respectfully,

W. A. L. THOMPSON HARDWARE CO.

OFFICE OF HAMMERSCHMIDT & ASSMAN.

Dimension, Rubble and Crushed Stone.

ELMHURST, ILL., Feb. 10, 1888.

Gentlemen:—The size 3 Rock Breaker that we have in operation, has done for us all you claimed for it. We are very well pleased, and think it is superior to any we have seen. Our expense for repairs has been but a trifle.

Yours respectfully,

HAMMERSCHMIDT & ASSMAN.

R. E. BROWNELL & CO.

General Contractors,

CHICAGO, Feb. 10, 1888.

Gentlemen:—In reply to yours of February 9, asking about your Breakers in use at our quarry, we will say that we have used two of your machines (Sizes 5 and 6) for two years, and that they have given us excellent satisfaction. We can break 500 tons in ten hours average run.

Yours truly,

R. E. BROWNELL & CO.

OFFICE OF FOLZ, ASHMAN & CO.

CINCINNATI, O., Feb. 17, 1888.

Gentlemen:—Your letter of February 9, 1888, asking our opinion of your Breaker, is at hand. In reply we would say, that we have been using three of your Breakers for two years, and they have given entire satisfaction, and have surpassed our expectations. We can recommend them to do all you claim for them.

Respectfully,

FOLZ, ASHMAN & CO.

H. RICE & SON.

CHICAGO, May 1, 1888.

Gentlemen:—We bought of your house a Size 3 Breaker, and subsequently bought a Size 6, which we have now been running almost constantly for four years, breaking limestone for Macadam. It gives

us pleasure to indorse your Breaker as all and more than you claim for it. We have practically had no repairs in the entire time the Breaker has been running. We can break a ton of Macadam or ordinary road metal a minute in it, when able to get the stone to it. It will take in stone 11 by 24 in each of three openings.

In short, it breaks more stone, takes less power and less repairs than you allow for it in your catalogue. The result of years of experience has convinced us that your Rock Breaker has no equal. The latest patterns of Jaw Breakers cannot compete with your Breaker, each receiving and discharging the same sized stone. The secret of your advantage lies in the mechanical fact that there is no lost time with your Breaker. It is constantly breaking. Your devices for oiling, the perfection of your journals, the simplicity of design and lack of parts, are all mechanical points of the highest excellence. Your Breaker does not require experienced machinists for running it. The shape of the breaking surfaces produces the most perfect cubes for road metal obtainable. It is the only form of breaker that will meet the requirements of contracts in this city, where great attention is given to size and shape of product. In fact, we know that no other Breaker is used for road metal in this city, where the consumption of granite and limestone macadam has grown to enormous proportions.

Respectfully yours,

H. RICE & SON.

OFFICE OF CINCINNATI BOWLDER SUPPLY CO.

W. W. Cor. Elm St. and Ohio River.

CINCINNATI, Feb. 11, 1888.

Gentlemen:—We heartily indorse the two Size 4 Breakers sent us by your firm for durability and rapid work, and must say that they excel all breakers we have yet used. On an average we break 150 cubic yards of river bowlders per day of ten hours, with each breaker. Same have been in constant operation for three years, and we never had any occasion for expense, worth mentioning, in having same repaired. In fact, they are all you represented them to be.

Yours truly,

CINCINNATI BOWLDER SUPPLY CO.

We can also add, we have used the present head six months, with appearances in favor of six months more. We dump an entire yard of bowlders into the hopper at once.

Once more yours truly,

CINCINNATI BOWLDER SUPPLY CO.

J. H. Bauman, Sup't.

OFFICE OF VULCANITE PAVING CO.

Dr. L. S. Filbert, Pres't.

D. L. Fisher, Treas.

OFFICE 1902 Green Street.

PHILADELPHIA, PA., March 1, 1888.

Gentlemen:—Yours of the 25th ult. received and note all you say. In reply, the Gates Breaker is all that can be desired, and in fact I consider it the best and most durable Breaker now in use, and it will certainly do more good work than any two other Breakers I ever saw. I have used many different Rock Breakers, but have abandoned all but the Gates, and have at this time six in use. A head and good concaves will run from six months to one year without change.

Very respectfully,

L. S. FILBERT, Pres't.

ATCHISON, KAN., Feb. 10, 1888.

Gentlemen:—Having had some five years' experience with Rock Breakers, I wish to say that I think your Size 3 Rock Breaker, owned by Mr. W. H. Duffield, and set up and run by myself, has the champion record of the world. November 3, 1887, we broke and screened 200 yards of rock for concrete, largest size to go through a 2 1/4 in. ring. 150 to 175 yards was an easy day's work, 10 hours. Gray limestone was the kind we were working. We have a 30 I. H. P. engine, and run the breaker 500 revolutions. Never had a hot box, or any accident or breakage. If there is any Breaker same size (Size 3) that can do any better than this, please let me know; I would like to see it. I am,

Fraternally yours,

H. J. CHAMBERS.

WHAT THE MINERS SAY OF THE GATES BREAKER.

CALEDONIA GOLD MINE.

TERRAVILLE, D. T., Sept. 24, 1888.

Gentlemen:—Your favor of the 4th inst. at hand and contents noted. We have one Size 6 Gates. With a 60 stamp mill, this saved us in labor, power, etc., some \$27 a day. With an 80 stamp mill (which we now have) I calculate about \$30 to \$35 a day.

We were using Blake Breakers No. 6, receiving openings 9x15 inches. For an 80 stamp mill it requires 4 Blakes, requiring 3 men, each 11 hour shift, to feed them. The Blake action is not continuous; half the time is lost in the backward action. We ran the Blake Breakers night and day to keep the mill supplied. The Gates Breaker has three receiving openings, capable of receiving 11x22 inches. Our ore is very hard; the larger the receiving openings of the Breaker are, the less labor we require to break up the rock in the mine. This saves us 3 men in the mine.

We run through the Gates Breaker 260 tons of ore in 11 hours with two men feeding. Thus we supply the broken stone for the entire mill for 24 hours by running the Gates Breaker one shift of 11 hours, or running the Breaker during the day, and shutting it down at night. This is a saving of four men. By this means I am enabled to lay off all laborers at night in the mine; do no hoisting of rock at night, and save the power of the Breaker, the wear of machinery, etc., and do the greater portion of my work during the day. This is an advantage.

The action of the Gates is continuous and direct. We could easily break with this Breaker 50 tons more of ore during the same time. For this Breaker we use about 35 or 40 horse power. The Breaker has a hopper so the ore does not have to be shoveled into it, but is dumped on it, and for the greater part falls into the openings.

The wear of the concaves and head is not greater than the wear of wearing parts in other Breakers. Our ore is so very hard that the wearing of these parts here is hardly a criterion. We replace the concaves every six weeks, and the head every two months. The Breaker can be set up to break the ore to any degree of fineness required.

I am highly pleased with the Breaker, and consider it the greatest improvement made for years in this class of mining machinery.

Any other information I can give you, I will be pleased to do.

Very respectfully,

T. L. SKINNER,
Superintendent.

ROPES GOLD AND SILVER CO.

ISHPEMING, MICH., Sept. 15, 1888.

Gentlemen:—In reply to your inquiries as to the working of the Size 2 Gates Breaker at the Ropes Gold and Silver Co.'s mill, would say we have been running the Breaker continuously for the past four months on very hard quartz, breaking 50 to 60 tons per day; and as to the working of the machine, would say I consider it far superior to the Blake, having used both here. As to wear, the chilled iron surfaces last about twice as long as in the Blake, and break the quartz to a more uniform size for the stamps, which we find a great advantage. My only regret is that we did not get a larger Breaker, thereby saving the amount of sledging to be done.

Yours truly,

GEORGE WEATHERSTON,
Superintendent.

NOTE.—On October 20 this Company purchased one of our Size 5. GATES IRON WORKS.

CORTEZ MINES.—LIMITED.

CORTEZ, NEVADA, Aug. 9, 1888.

Gentlemen:—Your favor of the 9th inst. received. Have been running the Gates Breaker for the last three weeks. It is doing good work. I am satisfied that as a Rock Breaker it is the best machine made.

Respectfully,

SIMEON WENBAN.
H. WELSH.

LEWISTON, I. T., Aug. 20, 1888.

Gentlemen:—Yours of recent date received, asking how I like the Rock Breaker I purchased or you,

In reply would say it works well, I am well satisfied with it, and from the experience I have had with Rock Breakers I consider this the only machine I ever saw that is worthy the name of a Rock Breaker. There have been a number of parties in to see it who intend to get Breakers this fall or next spring, and all are delighted with it.

Yours respectfully,

JOHN HEWITT

OFFICE OF HURON COPPER MINING CO.

HOUGHTON, MICH., April 10, 1888.

Dear Sirs:—In reply to your inquiries in relation to the Rock Breaker you put up at this mine last fall for exhibition, would say as follows: We have used it several times and broke from 150 to 200 tons of rich copper rock with it. Some of the rock broken contained from 15 to 35 per cent. of copper, all of which passed through it as easily as if it was only quartz, or hard amygdaloid rock. The machine is doubtless rightly named, "The Greatest Rock Breaker on Earth." I am fully satisfied that it is far superior to anything of the kind now in use on Lake Superior.

I am yours respectfully,

J. VIVIAN,
Superintendent.

RAPID CITY, BLACK HILLS, DAK., June 16, 1886.

Gentlemen:—I take pleasure in stating, unsolicited, that after extensive experience with your "Gates Breaker," I consider it the best in the market for breaking ores.

Respectfully yours,

G. E. BAILEY, E. M.

OFFICE OF THE SCOTTISH COLORADO MINING AND SMELTING CO (LIMITED).

Head Office, 157 Vincent St., Glasgow, Scotland.

SALINA, BOULDER CO., COL., March 3, 1888.

Gents:—Yours of the 25th ult. to hand. We only used our Breaker a few months, so cannot tell as to its durability, but so far as we tried it, it worked very satisfactorily.

Yours respectfully,

FRED WHITE,
Manager.

BRISTOL, NEV., March 27, 1888.

Gentlemen:—The Rock Breaker purchased of you has not been in constant use, as the mill has been idle for a long time, but when in operation gave good satisfaction, and never cost anything for repairs.

Very truly yours,

CHAS. L. ROE,
Formerly Sup't Bristol Silver Mining Co.

RICO, COL., Jan. 17, 1883.

Gentlemen:—You ask my opinion of your Rock Breaker's capacity, durability, etc. Although we have the smallest size, its capacity has always exceeded our wants. We have this day been breaking diamond quartz, as hard as any in the Rockies, and my only surprise is that the machine is not broken. I regret we did not order a larger size. Its operations so far have been satisfactory, and I, with confidence and pleasure, recommend it to any in want of Rock Breakers.

Yours respectfully,

H. W. CULBERTSON,
Manager Santa Clara Mining Co.

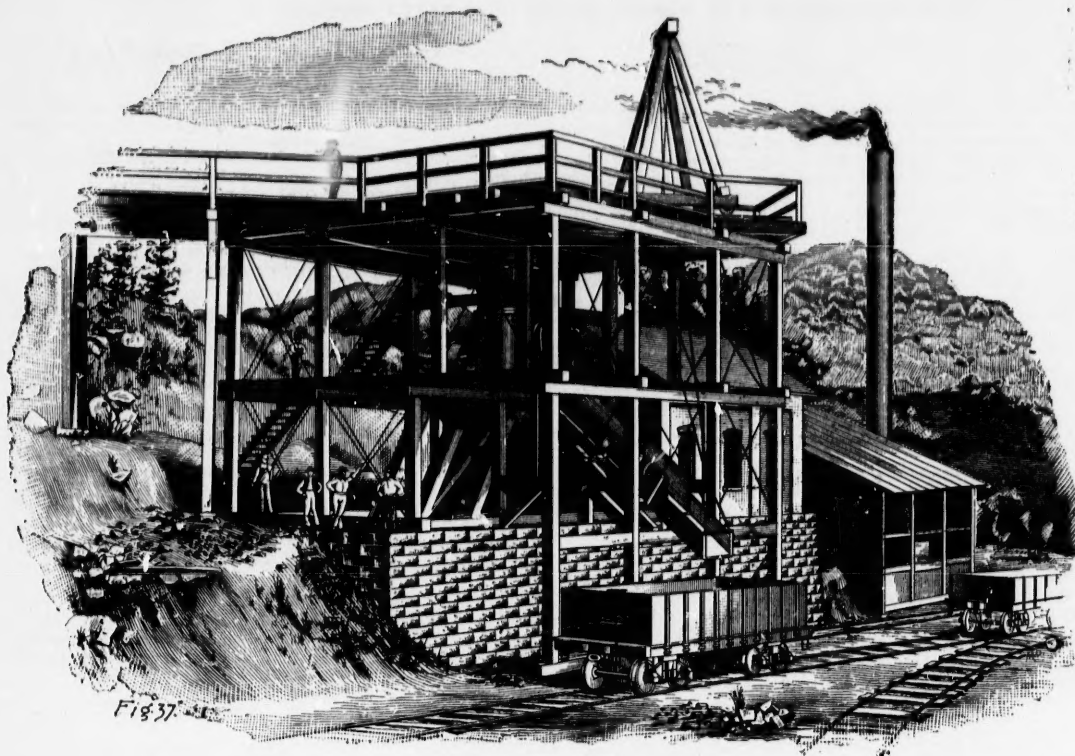


Fig. 37 represents the Plant of the Cambria Iron Works, erected at Birmingham, Pennsylvania. This Breaker is our size 8, the largest we build. The letter of Mr. John Fulton, the General Manager, will convince any one of the merits of this mammoth machine.

IRON AND STEEL WORKS OF THE CAMBRIA IRON COMPANY.

E. Y. TOWNSEND, President.
POWELL STACKHOUSE, Vice President.
JNO. FULTON, General Manager.

JOHNSTOWN, PA., Nov. 2, 1888.

DEAR SIR: Your favor of October 31st received. I visited the Birmingham Limestone Quarries of the Cambria Iron Company yesterday, and found the large Breaker (the mastodon of its class) working with the utmost ease. The machine is breaking 500 tons per day, which appears to be less than one-half the work of this powerful Breaker. We are extending the quarries to get the product up to 700 or 1,000 tons per day. The Breaker does its work very easily, and we estimate that when we get up to 700 tons per day it will cost us about two cents per ton to break the rock. The limestone at this point is rather tough, and requires more force to break it than the limestone near your city of Chicago.

I may say that we are very much gratified with the results of this large Breaker. You will remember that, when Mr. Stackhouse and the writer accompanied you out to the limestone quarry south of your city, we saw, I think, two or three men keeping the Breaker open, and it was for this reason that a larger Breaker was suggested. Its economical working shows the wisdom of this increase in its capacity, and I am not sure that you will not be urged to make a larger one still.

A number of persons have been down to see this Breaker at work, and they all return entirely satisfied as regards its ability to do what is claimed for it. Without urging it very fast, it will break two tons per minute readily. I think any reference that may come will receive full satisfaction in every respect in regard to the capacity and economy of the machine.

Very respectfully,

JNO. FULTON, General Manager.

doing 200 per cent more work than the two original breakers could do. The breaking is much superior to any I have ever seen, when it is accounted for the four months past during which it has been running. The comparative cost of repairs I cannot determine, as your breaker has not cost anything for repairs for the four months past during which it has been running. Yours truly,
M. F. BONZANO, Jr., Road Master.

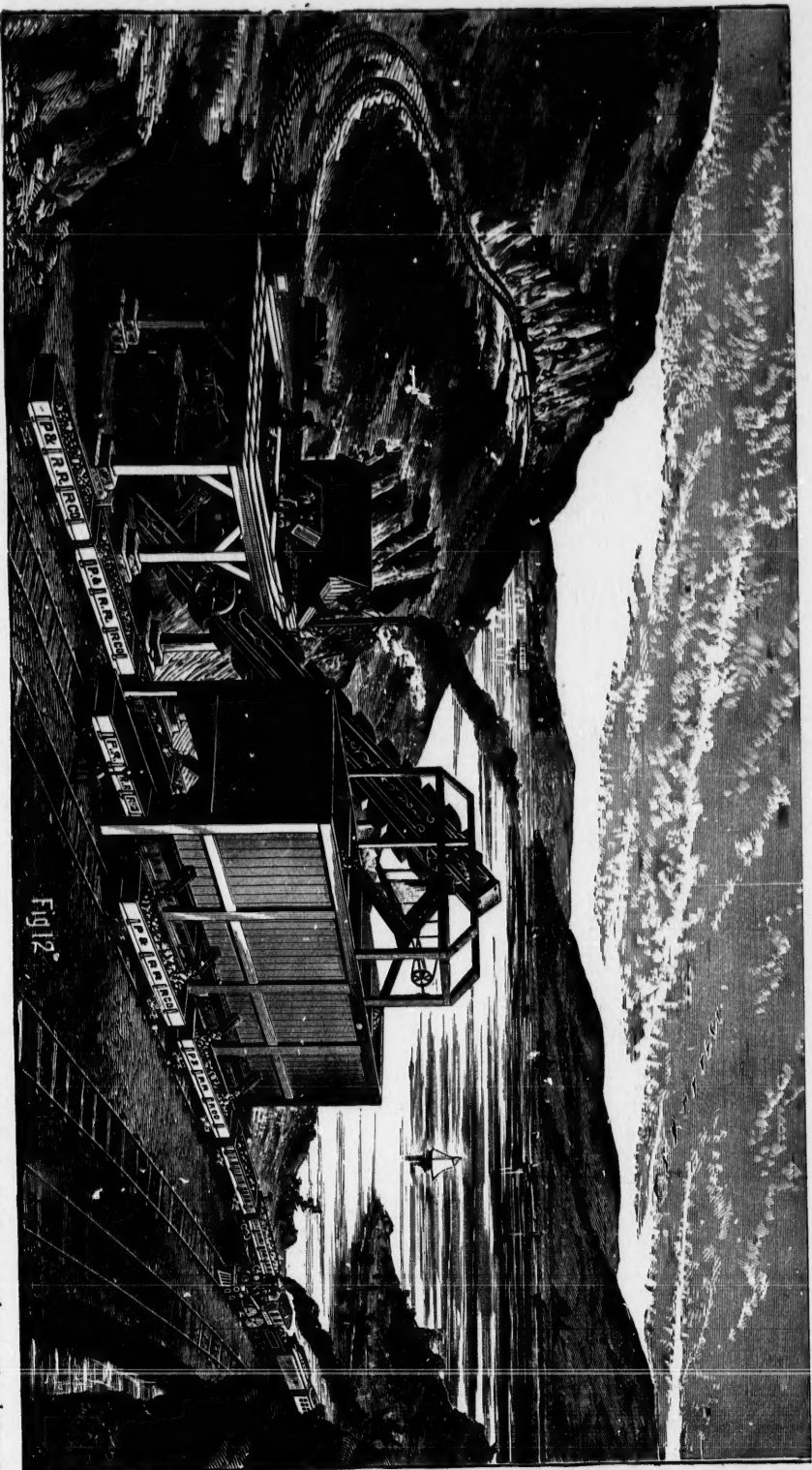


Fig 12

FIG. 12.—Represents our Size 5 Breaker, erected at Hopewell, New Jersey for the Philadelphia & Reading Railroad, where two of the Blake-Marsten Breakers were thrown out and ours put in on a guarantee to do more work than both. As to how well we succeeded, we refer you to the following letter from Mr. M. F. BONZANO, Division Road-Master.

OFFICE OF DIVISION ROAD-MASTER OF PHILADELPHIA & READING R. R.
9th and Green Sts., PHILADELPHIA, Feb. 24, 1884.

Gentlemen:—I have your favor of 31st ultimo, with tracing, showing breaking plant and machinery at this Company's Hopewell Ballast Quarry, inclosed. Since Mr. Gates, Jr., was here I have replaced the 9 x 9 Westinghouse Engine by an 11 x 11 Automatic of the same make, which gave us so much more power that I determined to alter the pulleys on the countershaft, so as to give it an additional speed of 80 revolutions. This increased our production so that we can now break, under the most unfavorable circumstances—still using the original head and chills—30 cubic yards of trap rock per hour, at a cost of about 50 cents per cubic yard, delivered on the track. The two breakers that the "Gates" replaced, broke together about 1 cubic yard per hour, under the most favorable circumstances, at a cost of about 75 cents per cubic yard, which does not include cost of delivery at points on the track. You will understand that the relative cost of breaking is not represented by the above figures, 50 and 75 cents. There is a fixed charge, as near as I can make it, of about 40 cents per cubic yard for quarrying, which is included in the above figures. From these figures you can see that the actual breaking, loading and delivery is only 10 cents per yard now, against 35 cents formerly for breaking and loading only, while using the two old breakers. At all events, I consider that the use of the size 5 "Gates" Breaker, makes a minimum saving to this Company of at least 25 cents per cubic yard on all the ballast broken, besides doing 200 per cent more work than the two original breakers could do. The breaking is much superior to any I have ever seen, which is accounted for by the peculiar construction of the machine. The comparative cost of repairs I cannot determine, as your breaker has not cost anything for repairs for the four months past during which it has been running.

Yours truly,
M. F. BONZANO, Div. Road Master.

OVER 1,000 GATES BREAKERS

Are now in use, supplanting the old style jawbreakers, and creating a revolution in the methods of breaking rock and ores. Nearly all the Railway companies of the United States have adopted this Breaker for making stone ballast, the cost of which has been reduced more than fifty per cent. by the use of the Gates in place of the jaw breaker.

Contractors, Cities and Villages are using it in many places exclusively for road metal.

Rock and ores that have hitherto been destructive of machinery, are now broken with success and economy.

The leading mines of the States are adopting the Gates Breaker, and are thereby enabled to increase dividends.

The Government has adopted the Gates Breaker for public works.

The largest iron mines and furnaces find the Gates machine a big factor in reducing cost.

For further particulars apply to

MARK H. IRISH, Manager for Canada,

Mail Building, TORONTO, ONT.

PRICE LIST OF BREAKERS.

(Subject to Change without Notice.)

Terms: Cash on delivery in Chicago; or, one-third Cash with Order, balance subject to Sight Draft, with Bill Lading.

Size oo.....\$ 125	Net, F. O. B. Chicago.	Size 4.....\$1,900	Net, F. O. B. Chicago.
" 0.....400	" " "	" 5.....2,500	" " "
" 1.....600	" " "	" 6.....3,500	" " "
" 2.....800	" " "	" 7½.....5,000	" " "
" 3.....1,200	" " "	" 8.....7,000	" " "

DIMENSIONS, WEIGHTS, CAPACITIES AND REQUIRED POWER.

SIZE.	Dimensions of each receiving opening about	Dimensions of three receiving openings combined, about	Weight of Breaker, POUNDS.	Capacity per hour, in tons of 2 000 lbs., passing 2½ in. ring, according to character of rock or ore.	Dimensions of Driving Pulley.		Space occupied by Breaker, INCHES.			Diameter of Hopper.	Revolutions of Driving Pulley.	†Size engine recommended to drive Breaker, Elevator and Screen.—IND. HORSE P.B.	
	INCHES.	INCHES.			Diam.	Face.	Height from bottom frame to top hopper	Width of frame.	Length of frame.			Limestone.	Granite, Ore
00	2 x 4	2 x 12	500	* — — — —	8	2½	24	17	26	13	700	1½	½
0	4 x 10	4 x 30	3,100	2 to 4	16	6	48	30	73	28	500	4	4
1	5 x 12	5 x 36	5,500	4 " 8	20	7	54	31	76	37½	475	8	8
2	6 x 14	6 x 42	7,800	6 " 12	24	8	60	39	90	39½	450	12	15
3	7 x 15	7 x 45	13,500	10 " 20	23	10	73	43	103	44½	425	20	30
4	8 x 18	8 x 54	20,000	15 " 30	32	12	85	54	114	51	400	30	40
5	10 x 20	10 x 60	27,000	25 " 40	36	14	96	63	123	59	375	40	50
6	11 x 24	11 x 72	36,000	30 " 60	40	16	109	73	139	66	350	50	60
7	13 x 30	13 x 90	60,000	40 " 75	48	18	116	73	144	120	350	60	75
8	18 x 45	18 x 135	89,000	100 " 150	48	20	156	90	164	132	350	125	150

*The size oo is intended for laboratory and sampling purposes. It is, notwithstanding its small size, a *practical machine*. When running to full speed, it will break 250 lbs. per hour of any rock or ore down to ½ inch, or 500 lbs. to ¾ inch. Has wheel to run by hand.

†POWER.—In estimating power required to drive our Breakers, ample allowance is made to provide for running an elevator, and screen also. But it must be borne in mind that no close estimate can be made to cover all sorts of rock and ore; and further, it should be observed that it requires much more power per ton to break rock to one-half inch than is required to break it to an inch. The above tabulated estimates are intended to cover the ordinary macadam breaking. For fine breaking add liberally to the power. Long experience has demonstrated the reliability of the following general rule applicable to breaking the hardest rock to 2½ inch ring, viz.: "The Gates Breaker will not require over one horse power per ton of rock broken per hour."

☞Very heavy cast iron hopper. All other sizes have boiler iron hoppers.

When sizes 0, 1, 2 and 3 are set fine as practical the product will vary from ¾ in. down to sand; sizes 4, 5, 6 and 7 from 1¼ in. down; size 8, 2 in. down, if stone is clean.

IN ORDERING BREAKER STATE DEFINITELY WHAT KIND OF ROCK OR ORE YOU WANT TO BREAK, AND HOW FINE. If possible, send small sample of rock.

☞If required, we will furnish a man to superintend setting up and starting Breaker, at \$5 per day and all expenses from time he leaves shop till his return.